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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/669,638	09/25/2003	Takeo Seino	Q77712	4469
23373	7590	01/27/2006	EXAMINER	
SUGHRUE MION, PLLC 2100 PENNSYLVANIA AVENUE, N.W. SUITE 800 WASHINGTON, DC 20037			GARCIA JR, RENE	
			ART UNIT	PAPER NUMBER
			2853	

DATE MAILED: 01/27/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.		Applicant(s)	
	10/669,638		SEINO ET AL.	
	Examiner		Art Unit	
	Rene Garcia, Jr.		2853	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 November 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-47 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10, 15-26 and 31-47 is/are rejected.
- 7) ☒ Claim(s) 11-14 and 27-30 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1, 4, 7, 8, 10, 15, 18, 21, 22, 24-26, 31, 34, 37, 38 and 40-42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamaguchi et al (US 6,270,210) in view of Young et al. (US 2003/0015036).

Yamaguchi et al. disclose the following claimed limitations:

* regarding claims 1, 10, 15, 24-26, 31 and 40-42, a liquid container/cartridge with bag, 1/ for a liquid ejection device (Abst)

* a liquid supply port/14/ for supplying liquid/ink/ to a liquid ejection head (col 2, lines 9-11);

* a flexible member deformable/bag portion of the cartridge, 10/ in accordance with an amount of remaining liquid contained in the liquid container/cartridge with bag/

* a rigid member/20/ provided on a second surface of said liquid container

* regarding claims 4, 18 and 34, wherein said rigid member/detecting plate, 20/ is stuck to an outer or inner surface of said liquid container/ink cartridge, 1/ (the detecting plate is located beneath the cover face of the cartridge, thereby being on the inner surface of the bag) (fig. 1).

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* regarding claims 7, 21 and 37, wherein said liquid container/bag portion of the cartridge/ is housed in a hard case/the cartridge/, and said rigid member/detecting plate, 20/ is formed with said hard case/cartridge/ (fig. 1).

* regarding claims 8, 22 and 38, wherein said liquid container/bag portion of cartridge, 10/ is housed in a hard case/the cartridge, outer cover/ which has a raised portion/sloped portion, 32/ in a predetermined region located apart from said liquid supply port/14/ in a region of said liquid container/cartridge with bag, 1/ which serves as a bottom surface when said liquid container is set in the liquid ejection device (col 6, lines 7-9, figs 1 & 6).

*further regarding claim 15, rigid member/20/ provided on a second surface of said flexible member/10/ (fig. 1)

*further regarding claim 24, bag-like flexible member/bag portion of the cartridge, 10/ (Fig. 1)

*further regarding claims 31 and 40, hard outer case/case main body, 30/ (Fig. 1) and an ink bag/bag portion of cartridge, 10/ contained within the hard outer case (fig. 1)

Yamaguchi et al. do not disclose the following claimed limitations:

* further regarding claims 1, 15 and 31 , a vibration activating and detecting unit provided on a first surface of said liquid container, for emitting a vibration to said liquid;

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- * a rigid member provided on a second surface of said liquid container, so as to be opposed to said vibration activating and detecting unit;

- * wherein an amount of remaining liquid is detected based on a vibration characteristic of said vibration activating and detecting unit which depends on a distance between said vibration activating and detecting unit and said rigid member.

- * further regarding claims 10, 24 and 40 a vibration activating unit provided on a first surface of said liquid container, for emitting a vibration to said liquid;

- * a vibration detecting unit provided on a second surface of said liquid container so as to be opposed to said vibration activating unit;

Young et al. disclose the following:

- * further regarding claims 1, 15 and 31, a vibration activating /resonating means, 24/ and detecting unit/sensing means, 30/ provided on a first surface of said liquid container/tank, 12/, for emitting a vibration to said liquid /paragraph 0016/ for the purpose of providing an accurate measurement of liquid level within a liquid container.

- * a rigid member/the outer wall of container/ provided on a second surface of said liquid container/tank, 12/, so as to be opposed to said vibration activating/resonating means, 24/ and detecting unit/sensing means, 30/ for the purpose of responding to the vibration signals provided from the tank/container/ wall;

- * wherein an amount of remaining liquid is detected based on a vibration characteristic of said vibration activating/resonating means, 24/ and detecting unit/sensing means, 30/ which depends on a distance between said vibration activating /24/ and detecting/30/ unit and said rigid

member /the outer wall of the container/ for the purpose of measuring the liquid in the container /paragraph 0023/(fig. 1).

* further regarding claims 10, 24 and 40, a vibration activating unit/resonating means, 24/ provided on a first surface of said liquid container, for emitting a vibration to said liquid; and a vibration detecting unit/sensing means, 30/ provided on a second surface of said liquid container/tank, 12/ so as to be opposed to said vibration activating unit/24/for the purpose of providing an accurate measurement of liquid level within a liquid container (fig. 1).

It would have been obvious at the time of the invention was made to a person having ordinary skill in the art to utilize a vibration activating and detecting unit provided on a first surface of said liquid container, for emitting a vibration to said liquid; a rigid member provided on a second surface of said liquid container, so as to be opposed to said vibration activating and detecting unit; wherein an amount of remaining liquid is detected based on a vibration characteristic of said vibration activating and detecting unit which depends on a distance between said vibration activating and detecting unit and said rigid member; a vibration activating unit provided on a first surface of said liquid container, for emitting a vibration to said liquid; and a vibration detecting unit provided on a second surface of said liquid container so as to be opposed to said vibration activating unit as taught by Young et al. into Yamaguchi et al. for the purposes of providing an accurate measurement of liquid level within a liquid container, responding to the vibration signals provided from the tank/container/ wall; measuring the liquid in the container and for the purpose of providing an accurate measurement of liquid level within a liquid container.

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3. Claims 2, 16, and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamaguchi et al (US 6,270,210) as modified by Young et al. (US 2003/0015036) as applied to claim 1 above, and further in view of Usui et al. (US 6,536,861).

Yamaguchi et al. as modified by Young et al. disclose all of the claimed limitations except for the following:

* regarding claims 2, 16 and 30, wherein said vibration activating and detecting unit includes a substrate capable of maintaining a constant shape irrespective of deformation of said liquid container.

Usui et al. disclose the following:

* regarding claims 2, 16 and 30, wherein said vibration activating/vibrating plate, 176/ and detecting unit/piezoelectric layer, 160, actuator (106) detects the residual vibration and causes vibration of contained liquid/ includes a substrate(col 10, line 48, col 19, lines 31-35, col 25, lines 6-20, figs 22 A-C, 110)

It would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize a constant shape irrespective of deformation of said liquid container, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use for the purpose of contacting the ink inside the container. *In re Leshin, 125, USPQ 416.* Material

It would have been obvious at the time of the invention was made to a person having ordinary skill in the art to utilize a substrate as taught by Usui et al. into Yamaguchi et al. as modified by Young et al. for the purpose of providing an increase in the accuracy of the detection of the resonant frequency.

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4. Claims 3, 5, 6, 9, 17, 19, 20, 23, 33, 35, 36 and 39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamaguchi et al (US 6,270,210) as modified by Young et al. (US 2003/0015036) as applied to claim 1 above, and further in view of Usui et al. (US 6,536,861).

Yamaguchi et al as modified by Young et al. discloses all of the claimed invention except for the following:

- * regarding claims 3, 17 and 33, wherein a through-hole is formed in said liquid container at a location corresponding to a vibration region of said vibration activating and detecting unit, and said vibration activating and detecting unit is provided on a substrate having a recess into which liquid of said liquid container flows, and a vibration is emitted from said vibration activating and detecting unit to said liquid via said recess

- * regarding claims 5, 19 and 35, wherein a plurality of said vibration activating and detecting unit and a plurality of said rigid members are arranged in a direction in which a liquid level of liquid in said liquid container changes.

- * regarding claims 6, 20 and 36, wherein an adhesive layer with which said substrate is liquid tightly fastened to said liquid container, is formed on a front or back surface of said substrate.

- * regarding claims 9, 23 and 39, wherein conductive patterns are formed on a surface of said liquid container, which said conductive patterns are connected to said vibration activating and detecting unit.

Usui et al. disclose

* regarding claims 3, 17 and 33, wherein a through-hole/1C/ is formed in said liquid container/ink cartridge, 1/ at a location corresponding to a vibration region/123B/ of said vibration activating/vibrating plate, 176/ and detecting unit/piezoelectric layer, 160, actuator (106) detects the residual vibration and causes vibration of contained liquid/, and said vibration activating/176/ and detecting unit/160/ is provided on a substrate/actuator, 106/ having a recess/cavity, 162 of fig 22A-C/ into which liquid of said liquid container flows, and a vibration is emitted from said vibration activating/176/ and detecting unit/160/ to said liquid via said recess (col 10, line 48, col 11, lines 6-10, col 19, lines 31-35, col 25, lines 6-20, figs 22A-C, 32 A-C, 110) for the purpose of contacting the ink inside the container.

* regarding claims 5, 19 and 35, wherein a plurality of said vibration activating and detecting unit /65A-C (actuators 106)/ and a plurality of said rigid members /side walls of cartridge, 1/ are arranged in a direction in which a liquid level of liquid in said liquid container changes for the purpose of detecting the remaining ink amount in a step-by-step manner (fig. 99).

* regarding claims 6, 20 and 36, wherein an adhesive layer/col. 19, lines 40-42/ with which said substrate/col. 19, lines 31-35/ is liquid tightly fastened to said liquid container/ink cartridge, 1; col 21, lines 9-12/, is formed on a front or back surface of said substrate for the purpose of providing easy assembling of the liquid container.

* regarding claims 9, 23 and 39, wherein conductive patterns/lead wires, 104a & 104b/ are formed on a surface of said liquid container, which said conductive patterns are connected to said vibration activating and detecting unit /col. 37, lines 42-52/ for the purpose of transferring a driving signal to the actuator and transferring the signal of resonant frequency detected by the actuator (figs. 37 & 41).

It would have been obvious at the time of the invention was made to a person having ordinary skill in the art to utilize a through-hole is formed in said liquid container at a location corresponding to a vibration region of said vibration activating and detecting unit, and said vibration activating and detecting unit is provided on a substrate having a recess into which liquid of said liquid container flows, and a vibration is emitted from said vibration activating and detecting unit to said liquid via said recess; wherein a plurality of said vibration activating and detecting unit and a plurality of said rigid members are arranged in a direction in which a liquid level of liquid in said liquid container changes; an adhesive layer with which said substrate is liquid tightly fastened to said liquid container, is formed on a front or back surface of said substrate; and wherein conductive patterns are formed on a surface of said liquid container, which said conductive patterns are connected to said vibration activating and detecting unit, as taught by Usui et al. into Yamaguchi et al. as modified by Young et al. for the purpose of contacting the ink inside the container, detecting the remaining ink amount in a step-by-step manner, easy assembling of the liquid container, and for the purpose of transferring a driving signal to the actuator and transferring the signal of resonant frequency detected by the actuator.

Allowable Subject Matter

5. Claims 11-14, 27-29 and 30 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The primary reason for the allowance of claim 11 is the inclusion of the limitations being for a liquid container wherein at least one of the vibration activating and detecting unit and the rigid member are movable in relation to the other. It is these limitations found in each of the claims, as they are claimed in the combination, that has not been found, taught or suggested by the prior art of record which makes these claims allowable over the prior art.

The primary reason for the allowance of claims 12, 27 and 28 is the inclusion of the limitations being for a liquid container wherein at least one of the vibration activating unit and the vibrating detecting unit are movable in relation to the other. It is these limitations found in each of the claims, as they are claimed in the combination, that has not been found, taught or suggested by the prior art of record which makes these claims allowable over the prior art.

The primary reason for the allowance of claims 13 and 29 is the inclusion of the limitations being for a liquid container wherein said liquid container is housed in a hard case, and the vibration activating and detecting unit is pressed on the first surface of the liquid container via an urging unit connected to the hard case. It is these limitations found in each of the claims, as they are claimed in the combination, that has not been found, taught or suggested by the prior art of record which makes these claims allowable over the prior art.

The primary reason for the allowance of claims 14 and 30 is the inclusion of the limitations being for a liquid container including a thin plate arranged on at least one of the first

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and second surfaces of the liquid container to provide stability to the at least one of the first and second surfaces as the ink is drained from the ink container. It is these limitations found in each of the claims, as they are claimed in the combination, that has not been found, taught or suggested by the prior art of record which makes these claims allowable over the prior art.

Response to Arguments

6. Applicant's arguments filed 04 November 2005 have been fully considered but they are not persuasive. With regards to motivation to modify Yamaguchi to include the resonating means of Young,

In re McLaughlin, 170 USPQ 209 (CCPA 1971): The test for combining references is not what the individual references themselves suggest but rather what the combination of the disclosures taken as a whole would suggest to one of ordinary skill in the art.

With regards to arguments that Young discloses liquid contained in a chamber outside of the bladder while Yamaguchi discloses ink contained in an ink bar. Young discloses that the liquid is within tank/12/ and detected with respect to being inside tank/12/ and not bladder/14/. Furthermore, examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, Young and Yamaguchi teach a way to detect liquid within a container therefore a reason to combine is established.

With regards to independent claim 10 it would have been reasonable to combine the deformable bag container in Yamaguchi with the vibration detection means of Young, since

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Yamaguchi and Young respectively disclose means for achieve detection of liquid within a liquid container. Obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992).

Although Young discloses vibration activating unit and vibration detecting unit next to each other there is no claim language that denote/specifies the arrangement of the vibration activating unit and vibration detecting units. Furthermore claims are read in the broadest interpretation. Vibration and detecting units next to each other are opposed.

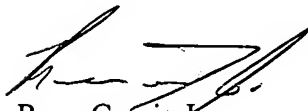
Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Communications with the USPTO

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rene Garcia, Jr. whose telephone number is (571) 272-5980. The examiner can normally be reached on M-F 8:00AM - 4:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen D. Meier can be reached on (571) 272-2149. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Rene Garcia Jr
23 January 2006


K. FEGGINS
PRIMARY EXAMINER